Abstract

An orientation preserving angular swivel joint suitable for mechanical robotic arms and in particular snake robots, the joint comprising two members and an angular bevel gear train that connects the two members of the joint. The gear train allows an actuator to be positioned along the axis of the joint while transferring forces to the periphery of the mechanism, thus creating a high mechanical advantage proportional to the radius of the robot. The gear train is capable of transferring rotational motion between the two members with a constant ratio. Relative rotation between two bays of the joint does not take place, thereby preventing electrical wires running through the body of the snake from being twisted, and thus avoiding failure.